What is claimed is:

1. An enzyme, substantially purified, having a purity with respect to macromolecules of at least about 95%, and having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

2. The enzyme of claim 1 having a molecular weight of from about 26 kd to about 32 kd as determined by SDS PAGE.

3. The enzyme of claim 1 having a molecular weight of about 29 kd as determined by SDS PAGE.

4. The enzyme of claim 1, wherein the enzyme is selectively reactive with cell-surface receptors.

5. The enzyme of claim 1, wherein the enzyme is selectively reactive with cell-surface receptors which are cell-surface proteins or glycolipids.

6. The enzyme of claim 1 having purity of at least about 97% with respect to macromolecules.

7. The enzyme of claim 1 having purity of at least about 99% with respect to macromolecules.

8. The enzyme of claim 1 having purity of at least about 99.7% with respect to macromolecules.

9. The enzyme of claim 1 having an N-terminal sequence comprising:

I-V-G-G-X-E/D-B-X-X-X-X-Z/B´-P-Z/H-Q-B-X-B´/Z,

wherein X is any amino acid, Z is an aromatic amino acid, B is an amino acid having a C2 to C6 alkyl side chain, and B´ is leucine or isoleucine.

10. The enzyme of claim 7, wherein all amino acids represented by X, Z or B are natural amino acids.

11. The enzyme of claim 1 having an N-terminal sequence comprising:

I-V-G-G-X-E/D-B

wherein X is any amino acid, B is an amino acid having a C2 to C6 alkyl side chain.

12. The enzyme of claim 1 comprising the krill-derived multifunctional hydrolase.

13. The enzyme of claim 1 having the N-terminal sequence comprising:

I-V-G-G-N/M-E-V-T-P-H-A-Y-P-W-Q-V-G-L-F-I-D-D-M-Y-F (SEQ ID NO. 1).

14. The enzyme of claim 11 having a molecular weight of from about 26 kd to about 32 kd as determined by SDS PAGE.

15. The enzyme of claim 1 having at least about 70% homology with the krill-derived multifunctional enzyme.

16. The enzyme of claim 1 having at least about 80% homology with

the krill-derived multifunctional enzyme.

17. The enzyme of claim 1 having at least about 90% homology with the krill-derived multifunctional enzyme.

18. The enzyme of claim 1 having at least about 95% homology with the krill-derived multifunctional enzyme.

19. A composition comprising an enzyme, substantially purified, having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase; and a pharmaceutically acceptable diluent or carrier.

20. A topical cosmetic composition comprising the composition of claim 19, wherein the diluent or carrier comprises a cream, gel or suppository composition.

21. A method of treating or preventing a microbial infection comprising administering a microbial infection treating or preventing effective amount of an enzyme, having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

22. The method of claim 21, wherein the microbial infection is viral.

23. The method of claim 22, wherein the viral infection is a herpes,

HIV, hepatitis, coronavirus, cytomegalovirus, rhinovirus or papilloma virus infection.

24. The method of claim 23, wherein the herpes infection comprises a HSV-1, HSV-2 or herpes zoster infection.

25. The method of claim 23, wherein the herpes infection is a genital herpes infection.

26. The method of claim 21, wherein the microbial infection causes a gastrointestinal disease.

27. The method of claim 26, wherein the gastrointestinal disease is an ulcer or diarrhoea.

28. The method of claim 21, wherein the microbial infection is a fungal infection.

29. The method of claim 28, wherein the microbial infection is a systemic fungal infection.

30. The method of claim 28, wherein the microbial infection is a skin, oral, vaginal or esophageal fungal infection.

31. The method of claim 28, wherein the microbial infection is a fungal nail infection.

32. The method of claim 21, wherein the amount of the multifunctional enzyme administered has inhibitory activity against cell-cell or cell-virus adhesion.

33. The method of claim 21, wherein the microbial infection is an ocular infection and the multifunctional enzyme is administered ocularly.

34. The method of claim 21, comprising treating or preventing a microbial wound infection by applying to the wound a microbial infection preventing effective amount of the multifunctional enzyme.

35. The method of claim 34, wherein the microbe is a drug-resistant microbe.

36. The method of claim 21, comprising treating or preventing coronavirus, cytomegalovirus, rhinovirus or papilloma virus infection by administering an infection treating or preventing effective amount of the multifunctional enzyme.

37. The method of claim 36, wherein the coronavirus is a coronavirus causing feline infectious peritonitis.

38. The method of claim 36, wherein the infection is a human papilloma virus infection.

39. The method of claim 21, comprising treating or preventing HIV infection comprising administering an HIV infection treating or preventing effective amount of the multifunctional enzyme,

wherein administering the enzyme comprises removing T-cells from a patient having an HIV infection, contacting the T-cells with the enzyme, and returning the contacted T-cells to the patient.

40. The method of claim 21, comprising treating or preventing an oral or esophageal fungal infection by administering a fungal infection treating

or preventing effective amount of the multifunctional enzyme.

41. The method of claim 21, comprising treating or preventing lichen planus or a pseudomonas, lichen planus, candida, gonorrhea, chlamydia, syphilis, trichomonas, or chancroid infection by administering a microbial infection treating or preventing effective amount of the multifunctional enzyme.

42. The method of claim 41, wherein the prevented or treated infection is a vaginal or oral candida infection.

43. The method of claim 21, comprising treating septic shock or toxic shock syndrome by administering a septic shock or toxic shock syndrome treating effective amount of the multifunctional enzyme.

44. The method of claim 21, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

45. A method of treating or preventing a dermatological condition comprising administering a dermatological condition treating or preventing effective amount of an enzyme, having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

46. The method of claim 45, wherein the dermatological condition is acne, psoriasis or eczema and the method comprises administering an acne, psoriasis or eczema treating or preventing effective amount of the multifunctional enzyme.

47. The method of claim 46, wherein the dermatological condition comprises eczema.

48. The method of claim 45, wherein the dermatogical condition comprises hemorrhoids and wherein the method comprises administering a hemorrhoid treating or preventing effective amount of the multifunctional enzyme by application on the hemorrhoids.

49. The method of claim 48, wherein the hemorrhoids are post-partum hemorrhoids.

50. The method of claim 45, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

51. The method of removing dead or peeling skin from otherwise healthy skin to improve the skin's appearance by applying a dead skin removing effective amount of an enzyme, having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

52. The method of claim 52, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

53. A method of treating or preventing a disease or cellular process selected from the group consisting of cancer, tissue adhesions, malaria, immune disorder and apoptosis comprising administering a treating or preventing effective amount of an enzyme, having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or

exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

54. The method of claim 53 comprising treating cancer by administering a tumor treating effective amount of the multifunctional enzyme.

55. The method of claim 54 comprising preventing or limiting tumor metastases by administering a tumor metastasis preventing or inhibiting amount of the multifunctional enzyme.

56. The method of claim 53 comprising treating or preventing tissue adhesions by administering an adhesion treating or preventing effective amount of the multifunctional enzyme.

57. The method of claim 56, wherein the tissue adhesion is a tendon-sheath or abdominal post-surgical adhesion.

58. The method of claim 53 comprising treating or preventing an immune disorder comprising administering an immune disorder treating or preventing effective amount of the multifunctional enzyme.

59. The method of claim 58, wherein the immune disorder is an autoimmune disease.

60. The method of claim 53, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

61. A method of lysing blood clots comprising administering a blood

clot lysing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

62. The method of claim 61, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

63. A method of enhancing the healing of a wound by applying to the wound a wound healing enhancing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

64. The method of claim 63, wherein the wound prior to application of the multifunctional enzyme is substantially free of necrotic tissue.

65. The method of claim 63, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

66. A method of treating or preventing pain, bronchitis, haemophilus influenzae infections, mycoplasma in lungs, foreskin infections, athlete's foot, fistulae infections, infected topical ulcers, gastric ulcers, navel infections in newborns, wrinkles, polyps, scars and kelloids, lichen planus, boils, warts and allergic itch, prostatitis, mastitis, gingivitis, sinusitis, arthritis and inflamed joints, diarrhoea, eye disease, or hair-thinness by administering a treating or preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or

exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

67. The method of claim 66, wherein the eye disease is glaucoma or cataracts.

68. The method of claim 66, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

69. A method of removing dental plaque by applying a dental plaque removing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

70. The method of claim 69, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

71. The method of preventing sexually transmitted microbial infection comprising administering, before, in conjunction with, or after sexual activity, a microbial infection preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

72. The method of claim 71, wherein the sexually transmitted microbial infection comprises candida, gonorrhea, chlamydia, syphilis,

trichomonas, chancroid, HIV, herpes, papilloma or hepatitis infection.

73. The method of claim 72, wherein the microbial infection is an vaginal candida infection.

74. The method of claim 72, wherein the microbial infection is an HIV infection.

75. The method of claim 71, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

76. A method of preventing a cold or influenza virus infection comprising administering to the lungs, nasal pasages or sinuses of an animal at risk of infection a microbial infection preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

77. The method of claim 76, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

78. A method of treating or preventing a microbial wound infection by applying to the wound a microbial infection preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

79. The method of claim 78, wherein the microbe is a drug-resistant microbe.

80. The method of claim 78, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

81. A method of treating a tissue, body fluid or composition of cells to remove or inactivate a cell adhesion component comprising administering to the tissue, body fluid or composition of cells with a cell-adhesion removing or inactivating effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

82. The method of claim 81, wherein the tissue, body fluid or composition of cells is treated with a immune rejection inhibiting amount of the enzyme.

83. The method of claim 82, wherein the tissue, body fluid or composition of cells is treated extracorporeally.

84. The method of claim 82, wherein the tissue, body fluid or composition of cells is treated *in situ* in an animal.

85. The method of claim 81, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

86. A method of cleaning a contact lens by applying to the lens a lens cleaning effective amount of an enzyme having multifunctional activity

comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

87. The method of claim 86, wherein the multifunctional enzyme composition is applied *in situ* in the eye.

88. The method of claim 86, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

89. A method of preventing, diminishing or removing a corneal scar comprising administering a corneal scar preventing, diminishing or removing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

90. The method of claim 89, comprising administering the multifunctional enzyme in conjunction with occular surgery and preventing the formation of a corneal scar.

91. The method of claim 89, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

92. A method of treating or preventing conjunctivitis comprising administering a conjunctivitis treating or preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a

molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

93. The method of claim 92, wherein the conjunctivitis is viral, bacterial or allergic conjunctivitis.

94. The method of claim 92, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

95. A method of treating or preventing a disease or cellular process selected from the group consisting of cystic fibrosis, COPD, atherosclerosis, malaria-infection associated pain, asthma, reperfusion injury, colitis and enteritis comprising administering a treating or preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

96. The method of claim 95, comprising treating a patient having cystic fibrosis or COPD by administering a cystic fibrosis or COPD treating effective amount of the multifunctional enzyme.

97. The method of claim 95, comprising treating or preventing atherosclerosis comprising administering an atherosclerosis treating or preventing effective amount of the multifunctional enzyme.

98. The method of claim 95, comprising treating or preventing asthma comprising administering an asthma treating effective amount of the

multifunctional enzyme.

99. The method of claim 95, comprising preventing or limiting reperfusion injury comprising administering a reperfusion injury preventing or limiting effective amount of the multifunctional enzyme.

100. The method of claim 95, comprising reducing the pain associated with malaria infection comprising administering a malaria infection-associated pain reducing effective amount of the multifunctional enzyme.

101. The method of claim 95, comprising treating or preventing colitis or enteritis by administering a colitis or enteritis treating or preventing effective amount of the multifunctional enzyme.

102. The method of claim 95, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

103. A method of treating or preventing an autoimmune disease comprising administering an autoimmune disease treating or preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

104. The method of claim 103, wherein the autoimmune disease is selected from the group consisting of multiple sclerosis, rheumatoid arthritis, lupus erythematosus, vasculitis, temporal arteritis, primary biliary cirrhosis, active chronic hepatitis, ulcerative colitis and scleroderma.

105. The method of claim 104, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

106. A method of inhibiting or preventing the process of apoptosis by administering to cells at risk for apoptosis an apoptosis inhibiting or preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

107. The method of claim 106, wherein the cells are T-cells of HIV-infected patients.

108. The method of claim 106, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

109. A method of treating or preventing post-partum hemorrhoids by administering a hemorrhoid treating or preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

110. The method of claim 109, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

111. A method of treating or preventing an infection by a drug-resistant microbe by administering a drug resistant microbial infection treating

or preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

112. The method of claim 111, wherein the microbe is a methicillin-resistant bacteria.

113. The method of claim 111, wherein the microbe is a quinilone-resistant bacteria.

114. The method of claim 111, wherein the microbe is a fungus.

115. The method of claim 114, wherein the fungus is resistant to azole-type drugs.

116. The method of claim 115, wherein the fungus is resistant to fluconazole.

117. The method of claim 111, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

118. A method of preventing sexually transmitted microbial infection comprising applying to a birth control device a microbial infection preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

119. The method of claim 118, wherein the sexually transmitted microbial infection comprises candida, gonorrhea, chlamydia, syphilis, trichomonas, chancroid, HIV, herpes, papilloma or hepatitis infection.

120. The method of claim 119, wherein the microbial infection is a vaginal candida infection.

121. The method of claim 119, wherein the microbial infection is an HIV infection.

122. The method of claim 118, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

123. A birth control device comprising a microbial infection preventing effective amount of an enzyme having multifunctional activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE, and substantial homology to krill-derived multifunctional hydrolase.

124. The device of claim 123, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

125. A pharmaceutical composition for removing or inactivating a cell-surface adhesion molecule comprising a cell-surface adhesion molecule removing or inactivating effective amount of a multifunctional enzyme having: activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity; a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE; and substantial homology to the krill-derived multifunctional hydrolase, and a pharmaceutically acceptable

diluent or carrier.

126. The composition of claim 125, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

127. A pharmaceutical composition for treating or preventing a cell-cell or cell-virus adhesion syndrome comprising a cell-cell or cell-virus adhesion syndrome treating or preventing effective amount of a multifunctional enzyme having: activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity; a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE; and substantial homology to the krill-derived multifunctional hydrolase, and a pharmaceutically acceptable diluent or carrier.

128. The composition of claim 127, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

129. A method of treating or preventing acute or chronic inflammation by administering an inflammation treating or preventing effective amount of a composition comprising the enzyme of claim 1.

130. A method of purifying the a multifunctional enzyme having activity comprising at least one of a chymotrypsin, trypsin, collagenase, elastase or exo peptidase activity, and a molecular weight between about 20 kd and about 40 kd as determined by SDS PAGE to obtain a composition containing substantially no other proteins that bind a selected protease inhibitor other than the multifunctional enzyme, the method comprising the steps of:

(a) applying a composition containing the multifunctional enzyme to an ion exchange column;

(b) eluting a first adsorbed material from the column with a first aqueous solution of first ionic strength I_1; and

(c) eluting the multifunctional enzyme from the column with a second aqueous solution of second ionic strength I_2;

(d) applying the eluted multifunctional enzyme from step (c) to an affinity matrix comprising the protease inhibitor; and

(e) eluting the affinity matrix with a third aqueous solution that destabilizes the interaction between the multifunctional enzyme and the protease inhibitor

wherein I_1 is selected so that the first aqueous solution (i) elutes the first adsorbed material containing proteins that can bind to the protease inhibitor, but which proteins adhere to the anion exchange column more weakly than the multifunctional enzyme and, (ii) does not elute the multifunctional enzyme; and wherein I_2 is greater than I_1 and is selected so that the second aqueous solution elutes the multifunctional enzyme and substantially no other proteins that bind the selected protease inhibitor.

131. The method of claim 130, wherein I_1 is about the ionic strength of 0.4M NaCl and I_2 is about the ionic strength of 0.6 M NaCl.

132. The method of claim 130, wherein steps (b) and (c) are conducted at a pH between about 5.5 and about 7.5.

133. The method of claim 132, wherein steps (b) and (c) are conducted at a pH of about 6.2.

134. The method of claim 130, wherein the ion exchange column comprises a cross-linked dextran and the ion exchange groups comprise diethylaminoethyl (DEAE) groups.

135. The method of claim 130, wherein the selected protease inhibitor used in the affinity matrix is resistant to digestion by the multifunctional enzyme.

136. The method of claim 135, wherein the protease inhibitor is mammalian trypsin inhibitor.

137. A method of treating or preventing a cell-cell or cell-virus adhesion syndrome comprising administering an anti-adhesion effective amount of a hydrolase effective to remove or inactivate a cellular or viral acceptor or receptor adhesion component that is involved in the cell-cell or cell-virus adhesion.

138. The method of treating or preventing a cell-cell or cell-virus adhesion syndrome of claim 137, wherein the syndrome comprises inflammation, shock, tumor metastases, autoimmune disease, transplantation rejection reactions or microbial infections.

139. The method of treating or preventing a cell-cell or cell-virus adhesion syndrome of claim 137, wherein (a) the disease is selected from the group consisting of microbial infection, immune disorder, cystic fibrosis, COPD, atherosclerosis, cancer, asthma, septic shock, toxic shock syndrome, conjunctivitis, reperfusion injury and pain, and (b) a cell surface receptor, associated with the cell-cell or cell-virus adhesion syndrome, selected from the group consisting of ICAM-1, ICAM-2, VCAM-1, CD4, CD8, CD11, CD18, CD28, CD29D, CD31, CD44, CD 49, CD62L, CD102 and asialo GM1 ceramide is removed or inactivated by the administered hydrolase.

140. The method of treating or preventing a cell-cell or cell-virus adhesion syndrome of claim 139, wherein the microbial infection is: a herpes,

HIV, hepatitis or papilloma infection; an infection causing colitis, ulcer or diarrhoea; a candida infection; a cold or influenza infection; a *pseudomonas*, *haemophilus*, *staphylococcus*, *streptococcus*, *klebsiella* or *E. coli* infection; a primary or secondary infection of leprosy; or an infection causing conjunctivitis.

141. The method of claim 137, wherein the multifunctional enzyme has a purity of at least about 95% with respect to macromolecules.

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